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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/567,886

02/09/2006

Frank B. Stamps

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EXAMINER

VERDIER, CHRISTOPHER M

ART UNIT

PAPER NUMBER

3745

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/567,886	<b>Applicant(s)</b> STAMPS ET AL.	
	<b>Examiner</b> Christopher Verdier	<b>Art Unit</b> 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 2-9-06, 3-16-07, 5-20-08.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 22-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 is/are allowed.
- 6) ☒ Claim(s) 1-17 and 22-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2-9-06 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3-16-07</u> .   | 6) <input type="checkbox"/> Other: _____                          |

Receipt and entry of Applicant's Amendment dated February 9, 2006 is acknowledged. Applicant's Amendment to the specification dated May 20, 2008 has not been entered because it does not comply with 37 CFR 1.121.

*Specification*

The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

The disclosure is objected to because of the following informalities: Appropriate correction is required.

On page 4, line 18, "the" should be deleted.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Claims 4 and 12, which recite at least one pin, have no antecedent basis in the specification for the underlined limitation.

It is suggested that the specification be amended to state this feature, in order to overcome the objection to the specification as failing to provide proper antecedent basis for the claimed subject matter.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-9, 12-17, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Jensen 2,774,553. Disclosed is an aircraft hub comprising a central member 16, plural blade attachment members 72/74 adapted for attaching propotor blades 54 to the central member, the blade attachment members being pivotally attached to the central member for pivoting about a pivot axis 60 generally normal to a plane of rotation of the blades, the pivoting allowing for in-plane motion of the blades relative to the central member, a damper 106 operatively connected to each blade attachment member for damping the in-plane motion of the associated blade, each damper being selectively switchable between at least first and second spring rates via valve 154 and element 160 and a damping rate associated with each spring rate, a pin 60 pivotally connecting each blade attachment member to the central member, the pivot axis of each blade being coaxial with the associated pin, the damper being selectively switched from the first spring rate to the second spring rate upon landing of the aircraft, the second spring rate being stiffer than the first spring rate, each damper being selectively switched from the second spring rate to the first spring rate upon takeoff of the aircraft, the first spring rate being softer than the second

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spring rate. The damper is operatively connected to an inner end of each blade attachment member 72/74.

Claims 1, 4, 9, 12, 17, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Buivid 2,754,937. Disclosed is an aircraft hub comprising a central member 40, plural blade attachment members 32 adapted for attaching propotor blades 22 to the central member, the blade attachment members being pivotally attached to the central member for pivoting about a pivot axis 44 generally normal to a plane of rotation of the blades, the pivoting allowing for in-plane motion of the blades relative to the central member, a damper 30 operatively connected to each blade attachment member for damping the in-plane motion of the associated blade, each damper being selectively switchable between at least first and second spring rates via restriction plugs 72 and a damping rate associated with each spring rate, a pin 44 pivotally connecting each blade attachment member to the central member, the pivot axis of each blade being coaxial with the associated pin. The damper is operatively connected to an inner end of each blade attachment member 32.

Claims 22 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Larsen 2,155,427. Disclosed is an assembly comprising a central member 9, plural blade attachment members 19, plural unnumbered blades, a flapping hinge 13 connecting an inner portion of each blade attachment member to the central member, each flapping hinge having an axis generally parallel to a plane of rotation of the assembly and providing for out of plane motion of the corresponding blade attachment member, a lead/lag hinge 20 connecting each blade to the blade

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attachment member, each lead/lag hinge having an axis generally normal to the plane of rotation of the assembly and providing for in plane motion of the blade relative to the blade attachment member, the axes being non-coincident, a blade strap 14 in the form of a unitary joint that encircles each flapping hinge and a bearing 26-28 of the associated lead/lag hinge, the blade strap oriented to extend out of the plane of rotation of the assembly.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-3 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over either (Jensen 2,774,553 or Buivid 2,754,937) in view of Noehren 4,244,677. Jensen 2,774,553

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or Buivid 2,754,937 disclose hubs substantially as claimed as set forth above, having respective pivot pins 60, 44 that connect each blade attachment member to the central member, but do not disclose that the pivot pins are formed as elastomeric bearings such that the pivot axis of each blade attachment member passes through a focus of the associated bearing.

Noehren shows a helicopter rotor having blades 22 attached to a central member 12, via elastomeric bearings 38, 40 such that the pivot axis of each blade attachment member passes through a focus of the associated bearing, for the purpose of controlling pitch-flap coupling which occurs during flapping of the rotor blades.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the pivot pins of the hubs of either Jensen or Buivid such that they are formed as elastomeric bearings such that the pivot axis of each blade attachment member passes through a focus of the associated bearing, as taught by Noehren, for the purpose of controlling pitch-flap coupling which occurs during flapping of the rotor blades.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Larsen 2,155,427 in view of either (Buivid 2,754,937 or Jensen 2,774,553). Larsen discloses a rotor assembly substantially as claimed as set forth above, but does not disclose dampers operatively connected to each blade attachment member for damping in plane motion of each associated blade, each damper being selectively switchable between at least first and second spring rates.

Buivid shows an aircraft hub having dampers 30 operatively connected to each blade attachment member 32 for damping in plane motion of each associated blade 22, each damper being selectively switchable between at least first and second spring rates, for the purpose of allowing adjustment of damping rates during different conditions.

Jensen shows an aircraft hub having dampers 106 operatively connected to each blade attachment member 72/74 for damping in plane motion of each associated blade 54, each damper being selectively switchable between at least first and second spring rates, for the purpose of allowing adjustment of damping rates during different conditions.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the rotor assembly of Larsen with dampers operatively connected to each blade attachment member for damping in plane motion of each associated blade, each damper being selectively switchable between at least first and second spring rates, as taught by either Buivid or Jensen, for the purpose of allowing adjustment of damping rates during different conditions.

#### ***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



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McArdle is cited to show a rotor with a flapping hinge having an axis generally parallel to a plane of rotation, and a lead/lag hinge connecting each blade to a blade attachment member, each lead/lag hinge having an axis generally normal to the plane of rotation and providing for in-plane motion of the blade relative to the blade attachment member.

***Allowable Subject Matter***

Claim 26 is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824.

The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher Verdier/  
Primary Examiner, Art Unit 3745

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